Code No. 11173 / S

FACULTY OF ENGINEERING

B.E. 4/4 (Civil) I-Semester (New) (Supplementary) Examination, May / June 2019

Subject : Foundation Engineering

Time : 3 hours **Max. Marks : 75**

Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.

PART – A (25 Marks)

1 Sketch the contact pressure distribution below flexible and rigid footings resting on clay. 2

2 The increment in vertical stress σ_z directly beneath a point load was found to be 450 kPa. Compute σ_z under the same load at a point (2, 1, 2). 3

3 Define Net ultimate bearing capacity. 2

4 Explain allowable pressure on footings. 2

5 Brief about over burden pressure correction to be applied on standard penetration number. 3

6 Using a drop hammer of 25 kN capacity and the height of drop being 5m, the average penetration over the last 6 blows was 12.5mm. Determine the allowable load on the pile using Engineering news formula. 3

7 When do you prefer a floating caisson? 2

8 Draw different shapes of wells. 3

9 Define inside and outside clearance of a sampling tube and mention their range. 3

10 To call a sample undisturbed, which properties of the soil are to be protected. 2

PART – B (50 Marks)

11 a) Compare Boussinesq's theory with Westergaard's theory and comment on the validity of these elastic theories in estimation of σ_z. 5

b) A space between two concentric circles of dia 10m and 5m is loaded with UDL of 150 kPa at ground level. Find the vertical stress increase at the center of circles at a depth of 2m below ground level using Boussinesq's theory. 5

12 Derive the Terjaghi's bearing capacity equation for shallow foundations. Also mention its assumptions and limitations. 10

13 a) Explain the procedure for separation of point bearing and skin frictional resistance of piles. 5

b) Determine the safe load carrying capacity of a group of 15no. of 300mm sized square piles arranged in 3 x 5 pattern, installed to a depth of 9m in a pure clayey deposit. The properties of the clay include q_u = 120 kPa, α = 0.68. 5

14 a) Explain various types of cofferdams and the conditions in which each of them is ideal. 5

b) Explain the process of sinking of well foundations. 5

..2

15 a) Enumerate the various methods of soil exploration and mention the circumstances under which each is best suited. 5
b) Discuss the calculation of reactions in struts. 5

16 a) Write short notes on correction for construction period. 5
b) Discuss in detail about single and multi under reamed piles. 5

17 a) Write the construction of pneumatic caissons. 5
b) Discuss the methods of Dewatering. 5

******